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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,825	03/28/2006	Xiaoqiang Xu	274330US6PCT	8732

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EXAMINER	
DEHGHAN, QUEENIE S	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
09/28/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/541,825	XU ET AL.	
	Examiner	Art Unit	
	QUEENIE DEHGHAN	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-26* is/are pending in the application.

4a) Of the above claim(s) *22-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-21,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/26/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of species 1 in set a and species 2 in set b in the reply filed on July 13, 2009 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims15-16 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

5. In the present instance, claim 15 recites the broad recitation between 5 and 30%, between 10 and 25% and between 15 and 20% which is the narrower statement of the range/limitation.

6. In the present instance, claim 16 recites the broad recitation from 300 to 1500 and from 300 to 800 which is the narrower statement of the range/limitation.

7. In the present instance, claim 20 recites the broad recitation a particle size smaller than 100μm and within a range from 10 to 80μm which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 14-15, 18, 21, and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Russell (3,345,147). Russell discloses a heat exchanger device comprising at least one fin including means for blowing a fluid, wherein the blowing means are uniform and include at least one wall of the fin, the at least one wall having open porosity (figures 4 and 5, col. 5, lines 23-29, col. 3 lines 44-49, col. 6 lines 24-30).

10. Regarding claims 15 and 21, the open porosity of the wall is 30% (col. 6 lines 14-15). An open porosity of 30% is interpreted to satisfy the term "an order of 17%", that is an order of magnitude of 17%.

11. Regarding claim 18, a blowing fluid velocity field is symmetric across the at least one open porosity wall (figure 5, col. 7 lines 31-34).

12. Regarding claim 25, the blowing fluid results from vaporization within the fin of a fluid that was initially in a liquid state (col. 7 lines 20-30).

13. Regarding claim 26, the apparatus further comprises an auxiliary cooling circuit wherein the manifold is also cooled in addition to the fins (col. 4 lines 50-55).

14. Claims 14-15, 21, and 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Xiao et al. (2006/0117802). Xiao discloses a heat exchanger device comprising at least one fin including means for blowing a fluid, wherein the blowing means are uniform and include at least one wall of the fin, the at least one wall having open porosity ([0019]-[0020], [0028]-[0029]).

15. Regarding claims 15 and 21, the open porosity is 5% ([0025])

16. Regarding claim 25, the blowing fluid results from vaporization within the fin of a fluid that was initially in a liquid state ([0029]).

17. Regarding claim 26, the heat exchanger further comprises an auxiliary cooling circuit ([0028]).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

21. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russell (3,345,147). Regarding claims 16 and 17, Russell discloses the fin is of parallelepipedal overall shape and tubular cross section (figure 6). Russell also teaches that permeability is a result effective variable of the material selected for achieving the desired resistance against the free flow of the cooling fluid and hence the desired cooling effect (col. 7 lines 49-72). It would have been obvious to one of ordinary skill in

the art at the time of the invention to have optimized the permeability of the cooling fin (such as to a value in the range from 500 to 600 Sm3/h/m2) as it is a known result effective variable for achieving the desired cooling effect of the cooling fins.

22. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russell (3,345,147) or Xiao et al. (2006/0117802), as applied to claim 14 above in further view of Suh et al. (4,270,951). Russell teaches the cooling fins can be made via several different porous materials (col. 7 lines 64-72). Xiao teaches the cooling fins can be made from sintered metal powder comprising stainless steel and nickel. However, both do specify a metal powder mixture of stainless steel, brass and nickel with a particular particle size. Suh et al. teaches a method for sintering powder metal parts comprising a mixture of various metal powders including nickel, brass, and stainless steel, with particles having a size smaller than 100μm (col. 3 lines 29-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized other known porous materials such as the sintered powder metal parts comprising of known sinterable metal powders such as nickel, brass and stainless steel of Suh in the apparatus of Russell or Xiao as a known equivalent to porous material of Russell or Xiao for achieving the predictable result of controlling the evaporation of the cooling fluid and hence the cooling effect of the fins while being able to handle the high temperature environment of the molten glass. Furthermore, it would have been obvious to one of ordinary skill in the art to have optimized the particle size of the metal powder for achieving the desired porosity of the sintered metal powder part.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUEENIE DEHGHAN whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Queenie Dehghan/
Examiner, Art Unit 1791